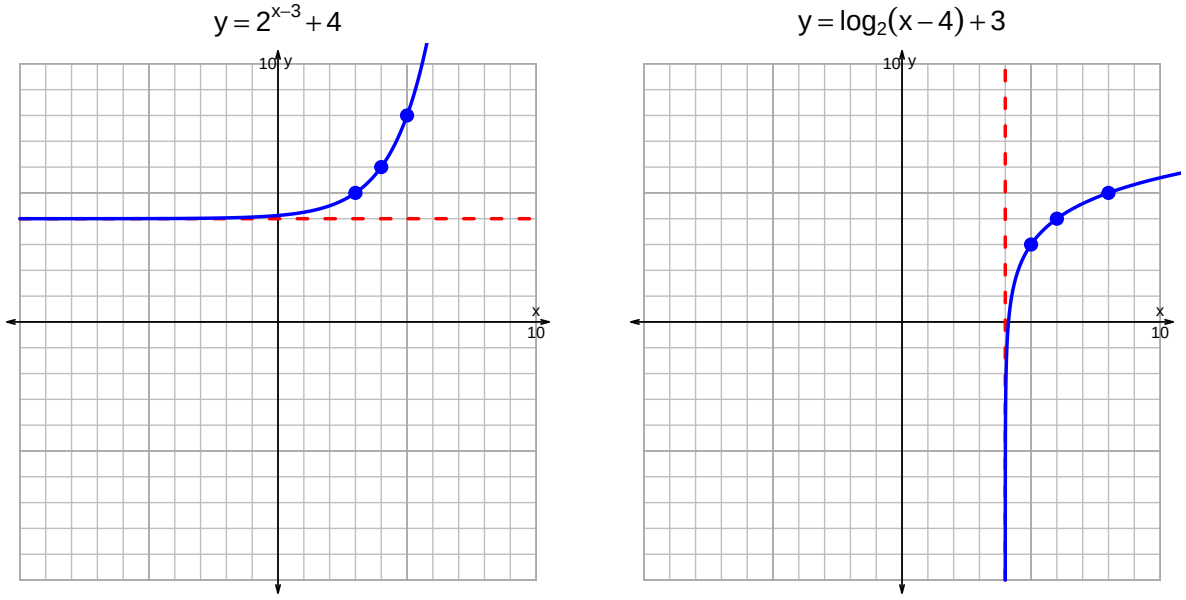
Name: Date:

s18quiz: EXP LOG (Solution v106)

1. Graph $y = 2^{x-3} + 4$ and $y = \log_2(x-4) + 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$17 = \left(\frac{3}{4}\right) \cdot 2^{-7t/5}$$

Divide both sides by $\frac{3}{4}$.

$$\frac{17 \cdot 4}{3} = 2^{-7t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 4}{3}\right) = \frac{-7t}{5}$$

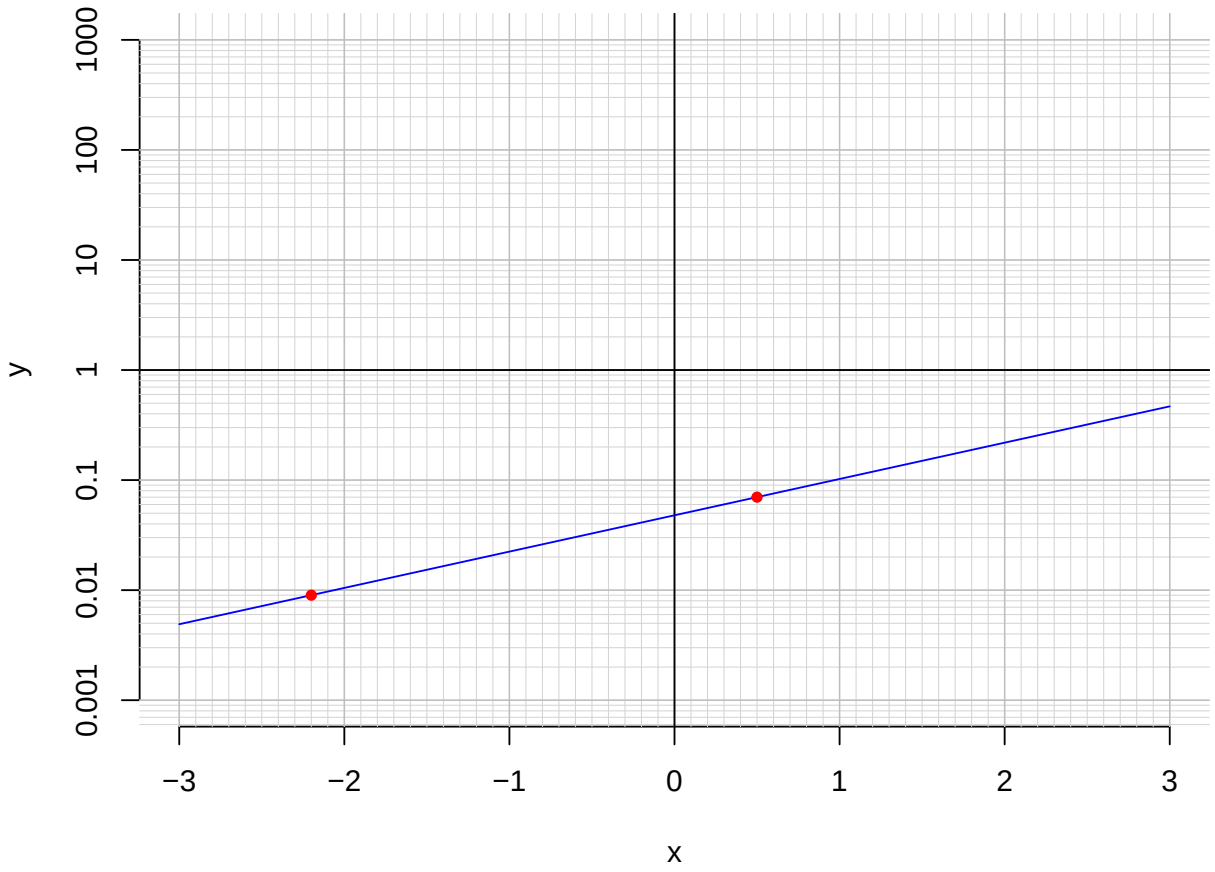
Divide both sides by $\frac{-7}{5}$.

$$\frac{-5}{7} \cdot \log_2\left(\frac{17 \cdot 4}{3}\right) = t$$

Switch sides.

$$t = \frac{-5}{7} \cdot \log_2\left(\frac{17 \cdot 4}{3}\right)$$

3. An exponential function $f(x) = 0.0479 \cdot e^{0.76x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-2.2)$.

$$f(-2.2) = 0.009$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{0.76} \cdot \ln\left(\frac{x}{0.0479}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.07)$.

$$f^{-1}(0.07) = 0.5$$